

Remarks

Applicants respectfully request reconsideration of the present application in view of the foregoing amendments and the following remarks. Claims 1, 3-4, 8-10, 18, 22, and 27-28 are pending in the application. No claims have been allowed. Claims 1, 27, and 28 are independent. Canceled claims are canceled without disclaimer or prejudice to renewal (e.g., in a continuation). Various amendments made herein are made for editorial reasons and not in response to the art.

Examiner Interview

Applicants thank the Examiner for his time during a telephonic interview on March 10, 2009. Claim 1 was discussed. Although specific agreement was not reached, the interview was helpful in advancing prosecution. After further consideration, Applicants have added language regarding “traversing the graph backwards” to the independent claims.

Claim Objections

The objection to claim 1 has been made moot because the claim has been amended as suggested by the Examiner.

Claim Amendments

Applicants have amended claim 1 for a change in focus. The amendments are supported by the originally filed Application. For example, the language regarding “edges represent non-deterministic choices associated with . . . the non-deterministic states and the edges representing non-deterministic choices are assigned respective probabilities” is supported at page 9, lines 2-3 and page 24, lines 13-14:

In a non-deterministic setting, probabilities are assigned to edges exiting a choice point [non-deterministic state vertex].

Language regarding “starting from a given untested state . . . assigning probabilities . . . and choosing vertices” finds exemplary support at FIG. 3 and page 9, lines 12 et seq. of the Application:

At 312, the method creates strategies through the graph that have a higher probability of touching untouched vertices or edges. For example, the method traverses the graph backwards starting from untouched vertices, and computes costs and probabilities at each vertex with an edge that reaches the untouched vertex. For non-deterministic vertices with edges reaching an untouched vertex, a probability is assigned based on the likelihood that the edge exiting the non-deterministic vertex will be selected. The method continues by stepping backward through the graph and assigning probabilities and costs to vertices based on the probability that they will be able to provide a path to an untouched vertex. Vertices that provide a higher probability of reaching an untouched vertex are selected as strategies.

Language regarding “strategies comprise respective series of one or more edge transitions” finds exemplary support at page 8, line 10:

A strategy is a series of one or more edge transitions through the graph.

Language regarding “subsequent execution repeats” finds exemplary support at page 8, lines 8-9:

This strategy can be repeated until the non-deterministic state chooses the desired coverage.

Language regarding “presents the non-deterministic choices . . . a plurality of times, whereby a possibility of reaching at least one of the untested states is increased” finds exemplary support at page 9, lines 26 et seq.:

In one example, by presenting a non-deterministic choice multiple times, it increases the possibility that a desired reaction will exercise a desired vertex in the program under test.

Accordingly, no new matter is added thereby.

35 U.S.C. § 103 Rejections: Claims 1, 3, 4, and 21-23

The Office action rejects claims 1, 3, 4, and 21-23 under 35 U.S.C. 103(a) as unpatentable over U.S. Patent No. 5,659,555 to Lee (Lee) and further in view of U.S. Patent No. 5,630,051 to Sun (Sun), in further view of U.S. Patent No. 7,290,193 to Kadkade (Kadkade), and further in view of U.S. Patent Application No. 2003/0046609 to Farchi (Farchi).

Claim 1

Lee's "guided random walk" fails to teach or suggest the recited "creating strategies . . . comprising . . . starting from a given untested state . . . traversing the graph backwards . . . , wherein probabilities are assigned based on likelihood that an edge exiting a respective non-deterministic state uncontrollable by the testing environment will be selected during execution . . . and choosing vertices such that a next state with a lower cost and higher probability is preferred." As understood by Applicants, Lee's random walk (Lee at 4:11 and 8:37) is just that, a random walk that does not take into account probabilities. Further, Lee does not contemplate the "non-deterministic state uncontrollable by the testing environment" as recited. Lee does mention "priority" at 9:12, but still falls short.

Sun's "two level state diagram" also fails to teach or suggest the recited "creating strategies . . . comprising . . . starting from a given untested state . . . traversing the graph backwards . . . , wherein probabilities are assigned based on likelihood that an edge exiting a respective non-deterministic state uncontrollable by the testing environment will be selected during execution . . . and choosing vertices such that a next state with a lower cost and higher probability is preferred." As understood by Applicants, Sun's two level state diagram does not involve creating strategies as recited. Sun does mention "Distinctiveness Measurement" (DM) at 13:17, but still falls short.

Kadkade and Farchi fail to remedy the deficiencies of Lee and Sun. Farchi does mention “stimulus X should be applied twice” at [0036] and “the choice of sequences of stimuli is influenced by the probabilities” at [0043]. However, Farchi still does not supply missing features regarding “creating strategies” (e.g., “starting from a given untested state” or “traversing the graph backwards”) as recited by claim 1. So, Kadkade and Farchi also fall short.

A combination of the references also fails to teach or suggest the recited “creating strategies . . . comprising . . . starting from a given untested state . . . traversing the graph backwards . . . , wherein probabilities are assigned based on likelihood that an edge exiting a respective non-deterministic state uncontrollable by the testing environment will be selected during execution . . . and choosing vertices such that a next state with a lower cost and higher probability is preferred.”

Applicants do not concede that the references would be combined, given that the combination would involve internally inconsistent goals and principles. However, even if they could somehow be combined in piecemeal fashion, they all lack the recited feature and therefore fail to establish a rejection.

For at least these reasons claim 1 and its dependent claims, 3-4 and 22, stand ready for allowance.

35 U.S.C. § 103 Rejections: Claims 7-15, 18, 20, and 24-26

Claims 7-15, 18, 20, and 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee, further in view of Sun, in further view of Kadkade, and further in view of Kranzlmuller’s “NOPE: A nondeterministic Program Evaluator” (Kranzlmuller) and further in view of Farchi. Claims 7 and claims 15 have been canceled in favor of new claims 27 and 28, which mimic claim 1.

New Claim 27

New claim 27 mimics claim 1. As understood by Applicants, Kranzlmuller fails to remedy the deficiencies of the other references. Therefore, in addition to separate reasons that Applicant will not belabor, claim 27 is allowable for at least the same reasons as claim 1.

Accordingly, claim 27 and its dependent claims, 8-10, stand ready for allowance.

New Claim 28

New claim 28 mimics the language of claim 1 but also recites "Chinese Postman tour." As understood by Applicants, Kranzlmuller fails to remedy the deficiencies of the other references. Therefore, in addition to separate reasons that Applicant will not belabor, claim 28 is allowable for at least the same reasons as claim 1.

Accordingly, claim 28 and its dependent claim, 18, stand ready for allowance.

Dependent Claims

Although Applicants do not belabor the claim language of each of the individual independent claims, they each set forth patentably distinct, novel, and non-obvious combinations separately allowable for additional reasons.

Request for Interview

If any issues remain, the Examiner is formally requested to contact the undersigned attorney to arrange a telephonic interview.

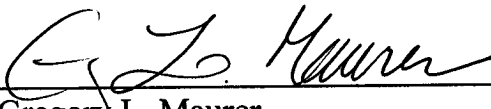
Conclusion

The claims stand ready for allowance. Such action is respectfully requested.

Respectfully submitted,

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